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For: A TOUCH PANEL WITH AN INTEGRAL WIRING HARNESS

1 1. A method of manufacturing a touch screen panel, the method comprising:  
2 coating an insulative substrate with a resistive layer;  
3 depositing a dielectric border layer on the periphery of the resistive  
4 layer; and  
5 applying a pattern of conductive edge electrodes to the resistive  
6 layer and applying a conductive wire trace pattern to the dielectric border layer to  
7 electrically isolate the wire trace pattern from the edge electrodes.

1 2. The method of claim 1 in which the resistive layer is a tin oxide  
2 composition.

1 3. The method of claim 1 in which the insulative substrate is glass.

1 4. The method of claim 1 in which the step of depositing the dielectric border  
2 layer includes screen printing a lead borosilicate glass composition on the periphery of  
3 the resistive layer.

1 5. The method of claim 1 in which the step of applying the pattern of  
2 conductive edge electrodes to the resistive layer and the step of applying the conductive  
3 wire trace pattern to the dielectric border layer includes screen printing silver/frit paste on  
4 the resistive layer to form the edge electrode pattern and simultaneously screen printing a  
5 silver/frit paste on the dielectric border layer to form the wire trace pattern.

1        ~~6.~~        The method of claim 1 further including the step of applying a protective  
2 border layer over the edge electrodes and the wire traces.

1        ~~7.~~        The method of claim 6 in which the step of applying the protective border  
2 layer includes screen printing an insulative composition over the edge electrodes and the  
3 wire traces.

1        ~~8.~~        The method of claim 7 in which the insulative composition is a lead  
2 borosilicate glass composition.

1        ~~9.~~        The method of claim 6 further including the step of firing the applied edge  
2 electrodes, the wire traces, the dielectric border layer, and the protective border layer.

1        ~~10.~~        The method of claim 9 in which firing includes subjecting the panel to an  
2 elevated temperature in a first period of time to burn off any organic material and a dwell  
3 period at the elevated temperature to cure the electrodes and wire trace materials and to  
4 fuse the border layer materials.

1        ~~11.~~        The method of claim 10 in which the elevated temperature is between  
2 500°C-525°C, the first time period is approximately 5 minutes and the dwell period is  
3 approximately 2-3 minutes.



1        ~~19.~~     The touch screen panel of claim 18 in which the protective border layer is  
2        formed from a lead borosilicate glass composition.

[illegible]

1        ~~20.~~     A method of manufacturing a touch screen panel, the method comprising:  
 2                        coating a substrate with a resistive layer;  
 3                        applying a pattern of conductive edge electrodes to the resistive  
 4 layer;  
 5                        depositing a dielectric border layer over the conductive edge  
 6 electrodes; and  
 7                        applying a wire trace pattern on the dielectric border layer.

1                21.     The method of claim 20 in which the resistive layer is a tin oxide  
 2 composition.

1                22.     The method of claim 20 in which the substrate is glass.

1                23.     The method of claim 20 in which the step of depositing the dielectric  
 2 border layer over the conductive edge electrodes includes screen printing a lead  
 3 borosilicate glass composition on the periphery of the touch screen panel over the  
 4 conductive edge electrodes.

1                24.     The method of claim 20 in which the step of applying the pattern of  
 2 conductive edge electrodes includes screen printing silver/frit paste on the resistive layer  
 3 to form the edge electrode pattern.

1           25.     The method of claim 20 in which the step of applying a wire trace pattern  
2 includes screen printing silver/frit paste on the dielectric border layer to form the wire  
3 trace pattern thereon.

1           26.     The method of claim 20 further including the step applying a protective  
2 border layer over the wire trace pattern and the dielectric border layer.

1           27.     The method of claim 26 in which the step of applying the protective  
2 border layer includes screen printing an insulative composition over the wire trace pattern  
3 and the dielectric border layer.

1           28.     The method of claim 27 in which the insulative composition is a lead  
2 borosilicate glass composition.

1           29.     The method of claim 27 further including the step of firing the applied  
2 edge electrodes, the wire traces, the dielectric border layer, and the border layer.

1           30.     The method of claim 20 in which firing includes subjecting the panel to an  
2 elevated temperature in a first period of time to burn off any organic material and a dwell  
3 period at the elevated temperature to cure the electrodes and wire trace materials and to  
4 fuse the border layer materials.

- 1            31.    The method of claim 30 in which the elevated temperature is between  
2    500°C-525°C, the first time period is approximately 5 minutes and the dwell period is  
3    approximately 2-3 minutes.

FOR FILING

1        ~~32.~~    A touch panel comprising:  
2                    a substrate with a resistive layer deposited on one surface thereof;  
3                    a pattern of conductive edge electrodes on the resistive layer;  
4                    a dielectric border layer over the pattern of conductive edge  
5 electrodes; and  
6                    a wire trace pattern on the dielectric border layer.

1            33.    The touch panel of claim 32 in which the resistive layer is a tin oxide  
2 composition.

1            34.    The touch screen panel of claim 32 in which the substrate is glass.

1            35.    The touch screen panel of claim 32 in which the dielectric border layer is  
2 formed from a lead borosilicate glass composition.

1            36.    The touch screen panel of claim 32 in which the conductive wire trace  
2 pattern is formed from a silver/frit paste composition.

1            37.    The touch screen panel of claim 32 in which the pattern of conductive  
2 edge electrodes are formed from a silver/frit composition.



1            38.     The touch screen panel of claim 32 further including a protective border  
2     layer over the edge electrodes and the wire traces.

1            39.     The touch screen panel of claim 38 in which the protective border layer is  
2     formed from a lead borosilicate glass composition.

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1 40. A method of manufacturing a touch screen panel, the method comprising:  
2 coating an insulative substrate with a resistive layer;  
3 depositing a dielectric border layer on the periphery of the resistive  
4 layer;  
5 applying a pattern of conductive edge electrodes to the resistive  
6 layer and applying a conductive wire trace pattern to the dielectric border layer to  
7 electrically isolate the wire trace pattern from the electrodes;  
8 depositing a protective border layer over the edge electrodes and  
9 the wire traces to protect them; and  
10 co-firing the wire trace pattern, the edge electrodes, the dielectric  
11 border layer, and the protective layer all at the same time.

- 1 41. A method of manufacturing a touch screen panel, the method comprising:  
2 coating a substrate with a resistive layer;  
3 applying a pattern of conductive edge electrodes to the resistive layer;  
4 depositing a dielectric border layer over the conductive edge electrodes;  
5 applying a wire trace pattern on the dielectric border layer;  
6 applying a protective border layer over the wire trace pattern; and  
7 co-firing the wire trace pattern, the edge electrodes, the dielectric border  
8 layer, and the protective border layer all at the same time.

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